



INDIANA DEPARTMENT OF ADMINISTRATION
PUBLIC WORKS DIVISION

CAD DRAWING STANDARDS

Effective: July 1st, 2001

INTRODUCTION

All references to the term “Public Works” shall be interpreted to include and mean the Public Works Division of the Indiana Department of Administration.

These Cad Drawing Standards shall be utilized in full compliance by every entity (whether individual, partnership, corporate or otherwise) that performs drawing work for any Public Works project originating on or after July 1st, 2001.

The latest version of these Cad Drawing Standards is always available online at the following Internet address: <http://www.state.in.us/idoa/pwd/cadstds.html>, and the downloadable files there currently provide support for AutoCAD® Release 12, Release 13, Release 14, v2000, v2000i, and v2002, as well as AutoCAD® LT (“light”) 2, LT 95, LT 97, LT 98, LT 2000, LT 2000i, and LT 2002, and all other compatible cad packages from Autodesk® and/or other cad software companies, and running on MS-DOS® v5.00 or greater, Microsoft® Windows® 3.1x, Microsoft® Windows for Workgroups®, Microsoft® Windows® 95, Microsoft® Windows® 98, Microsoft® Windows NT®, or Microsoft® Windows® 2000. Cad softwares running on UNIX, Linux, OS/2, or other operating systems may very well work with these Standards, but have neither been investigated or tested.

This main document describes the information required for the successful completion of formatting procedures and timely submittal of cad drawing files done for all Public Works construction projects.

Some of the information contained with this package is intended towards various AutoCAD® version-specific instruction, and may or may not be directly applicable in any later releases of AutoCAD® softwares.

Please refer also to the “pwreadme.txt” and “readlisp.txt” ascii text files, included with this Cad Drawing Standards package, for answers to frequently asked questions, and miscellaneous details regarding the correct setup, and usage, of the various standard titleblocks, AutoLisp® programs, and other included files.

For all other questions or any clarifications regarding the Cad Drawing Standards described herein, and/or for limited technical assistance, please contact:

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1. OVERVIEW

The standards defined in this manual are to be utilized in the production and archival of all sets of construction documents created for Public Works. These standards are to provide a consistent foundation for the continued development of Public Works' Computer Aided Facilities Management System. It is the prime objective of these standards to provide a convenient method of data acquisition and management of all graphical and non-graphical objects used in the generation of a set of construction drawings. This may be most readily achieved by implementing consistent and uniform qualities in such things as drawing titleblocks, sheet/file naming, and layernaming.

The key points to be presented in these Cad Drawing Standards include:

- Project directory structure

Firms may do their project work out of any directory structure they choose. Each drawing sheet shall be submitted as a standalone electronic file, and therefore all reference files (xrefs) must be "bound" into the standalone sheet prior to submittal(s).

- AIA (2nd Edition) layering

Whether your firm is already using the AIA2 layering system in-house (as many are), the original AIA system, the SMACNA system, another standard, or you have an internal layering system in place, Public Works shall receive all drawing files with their layers named according to the AIA, 2nd Edition, Cad Layer Guidelines. If not currently using the AIA2 system, the suggested remedy is to develop a transposition, or "mapping", routine to rename the layers in the drawing files, prior to submittal to Public Works. You may, of course, wish to keep your original files intact, make copies for this process, and then submit those corrected copies to Public Works.

- File naming & Sheet naming

In order to simplify electronic access of desired drawings by Public Works personnel, standardized sheet numbering shall be used on each construction drawing, and the filename for that sheet shall be the same as that sheet number. An example would be that of an Architectural floor plan sheet, named "A101", for which "A101.dwg" would then be the cad filename. Do not add any prefix or suffix to either name.

- Submittals of files

Standalone electronic copies of each construction drawing sheet in AutoCAD® (.DWG) format shall be submitted to Public Works upon completion of a project. Project submittals shall be done preferably via email, instead of by disk(s), whenever possible and feasible. Details of the procedures are at the very end of this document.

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2. SOFTWARE TOOLS

In order to provide for the greatest flexibility, and yet retain the standards that are critical to providing consistent design and drafting, the usage of other software applications developed by Autodesk®, such as Architectural Desktop™ and Land Development Desktop®, are encouraged as possible additions to basic AutoCAD®, for assisting the designer/technician in the creation of project drawings. It is recognized that although some vendors currently utilize other leading 3rd-party add-on applications to AutoCAD®, and a few are using different cad softwares, it should be noted that as AutoCAD® continues to evolve and dominate the building industry cad software market, the various applications used within the previous software packages known as Softdesk®, and now used within the Architectural Desktop™ and Land Development Desktop® packages, will be increasingly integrated as part of all AutoCAD® packages, and thereby defaulting towards an inevitable cad software standard for all building design and construction.

Public Works' standard cad software is currently AutoCAD® 2000/2000 LT. Almost every firm doing project work for Public Works has also standardized on some version, or "flavor", of AutoCAD®. While your firm may use a different cad platform, like MicroStation®, or another software, all project cad files shall be submitted in clean and usable AutoCAD® (.DWG) format, and in authentic representation of the original drawing hardcopy. Any conversion problems into AutoCAD® (.DWG) format are the responsibility of the project firm(s), including any cad drawing files generated or modified by any subcontractors or other third-party firms.

Various applications frequently utilize three-dimensional drawing principles, and as such, three-dimensional files may then also be generated, and used for projects. However, these files must be created with care, so that two-dimensional editing may be done later, as needed, without involving any inordinate difficulties by the next user.

Note: The project drawing files may be submitted in any version of AutoCAD® drawing (.DWG) format, since AutoCAD® drawing (.DWG) files are generally upward-compatible in all respects. The AutoCAD® 2000i and 2002 (.DWG) formats are directly compatible with the version 2000 format, since internally they are all the exact same identical version (2000) format. Only the softwares have been enhanced within 2000i and 2002.

3. FILE DESCRIPTIONS

Construction projects

A "**base**" drawing file (entire floor of a building) contains the exterior building shell walls, windows and the building core, such as elevators, stairs, rest rooms and common corridors, as well as interior walls and doors. It is a pure model file, often referred to as a "background" in construction drawing sheets.

It is strongly recommended that the "**sheet**" drawing files for building Mechanical, Plumbing, Electrical, Structural, and etc., have the "**base**" drawing file referenced in during the course of the project, in case of ongoing changes.

Once a project is completed, all "**sheet**" files are to have ALL references bound in, for the archival of the Construction Document drawing files. These "**sheet**"

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files are the **only** project drawing (.DWG) files to be submitted to Public Works, commensurate with the closeout of a particular construction project.

Note: A small “key plan” of the entire building floor, and with the project limits hatched, shall be included on each “plan” type drawing, when working in a project area that is less than an entire floor.

If a project is smaller (typically one individual is working on the cad files for that project), the “**base**” drawing file *may* be used to contain the various construction drawing sheets in paper space or layouts within that same file, rather than referencing into separate “**sheet**” files, *during* the ongoing project revisions. However, once the project is completed, the submittal to Public Works must be broken apart (i.e., “Copy” or “Saveas”) into the separately-named “**sheet**” files (ex: A201.dwg and E201.dwg), and all other sheet arrangements (including other layouts in 2000/2000i/2002) removed prior to submittal. Again, you may wish to leave your original files intact, and process copies for submittal to Public Works.

Reminder: All “**sheet**” files are to have **all** references bound in, prior to submittal.

4. CONSTRUCTION SHEET NUMBERING AND FILE NAMING CONVENTIONS

Each construction sheet number shall be the same as the (.DWG) filename. Discipline sets of drawings shall be numbered sequentially within a series type. For example, an Architectural floorplan sheet “A101” (the first in a series of submitted *plan* sheets from the Architect) would be contained in a drawing file named “A101.dwg”. The following two lists (based upon the National Cad Standard – <http://www.nationalcadstandard.org>) shall be combined and used for the sequential naming of all construction sheets/ilenames:

- A Architectural / Interiors (optional, see “I”)
- C Civil / Site – environmental, grading, roads, topo, survey, utilities, etc.
- D_ Demolition – all disciplines: *combine the letter “D” with the discipline code*
Examples: DA#### for an Architectural demolition sheet/file
DFP#### for a Fire Protection demolition sheet/file
- E Electrical – pwr, light, comm, grnd, alarms/paging, security, a/v, etc.
- F Foundation (optional, see “S”)
- FP Fire Protection
- H Hazardous Materials, Safety Zoning, Evacuation Plans, Life Safety, etc.
- I Interiors (optional, see “A”)
- L Landscaping
- M Mechanical – HVAC, piping, temperature controls (optional, see “T”)
- P Plumbing
- Q Equipment drawings
- R Resource drawings
- S Structural / Foundation (optional, see “F”)
- T Temperature controls (optional, see “M”)
- Z Shop drawings

- 000 Series General – cover, index, symbols, legends, general notes, vicinity
- 100 Series Plans (horizontal views)
- 200 Series Elevations (vertical views)
- 300 Series Sections (sectional views)

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- 400 Series Large Scale Views (plans, elevations, sections)
- 500 Series Details
- 600 Series Schedules and Diagrams
- 700 Series user defined
- 800 Series user defined
- 900 Series 3D Representations (isometrics, perspectives, photographs)

Combining sheets - small projects may incorporate more than one image per sheet, in order to minimize the number of total sheets and printing costs. For example, sheet "A101" may incorporate the Construction and Demolition plans for a small project area. The above listed sheet number series are designed for larger projects, but shall also be maintained on small projects. Use the dominant image presented on a sheet for the naming of the particular drawing sheet/file.

Note: All firms involved on a particular project shall coordinate naming of the sheets/files as necessary, so as to avoid any possible duplication of these names.

5. PRESENTATION OF DRAWINGS

A. TEXT FONTS/STYLES

Public domain and custom AutoCAD® .SHX fonts ("architxt.shx", "archquik.shx", "pwArial.shx", "pwTimes.shx", etc.) are used in the standard AutoCAD® Release 12/13-compatible titleblocks to closely emulate the corresponding Windows® TrueType (.TTF) fonts used in the standard titleblocks for the higher AutoCAD® Softwares. Postscript fonts (.PFA, .PFB, etc.), and any other types of fonts (GhostScript, .ABF, .CPI, .TEX, etc.), are **not** allowed. Apple/MAC versions of TrueType fonts must be converted to PC format for submittal(s).

Customizing a standard .SHX font included within any AutoCAD® package is **not** allowed. You are free to *copy* one of the standard fonts to a *new* filename, and modify it (usually the addition of special characters, such as a centerline, phaseline, and other symbols, common fractions, etc.). The reason for this is really quite simple: not everybody's *fontname.shx* is the same, which would then cause textual errors on display, plotting, and etc. on drawing files from a different firm. The latest versions of all customized fonts, and all shape and other support files, used in the creation or modification of a project's drawing files, shall be submitted (*please, just*) once to Public Works for inclusion. See the submittal procedures for miscellaneous files at the very end of this document.

B. STANDARD CONSTRUCTION TITLEBLOCKS

The standard Public Works construction titleblocks are available in ANSI, ARCH, and ISO sizes. One of these standard Public Works titleblocks is to be used on each construction drawing sheet. Each has a place to embed your firm's logo. Review the notes contained within each titleblock (.DWG) file for correctly adding your firm's logo into them. The titleblocks have attributes to display the following, all of which shall be properly completed:

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- Project Title
- Project Building
- Project Institution
- Project Address Line #1
- Project Address Line #2
- Public Works Project #
- Public Works Requisition #
- Public Works Account #
- Designed By Initials
- Drafted By Initials
- Drawing Date
- Drawing Number
- Drawing Scale
- Sheet Number
- Total Number of Sheets
- Revisions (multiple, as needed)

Note: Use of (Sheet Number/Total Number of Sheets) in addition to the “Drawing Number”, is discretionary to the particular project. They are provided for flexibility.

Feel free to add additional information, such as your own A/E project#, billing#, and etc., in reasonable sizes and locations within the titleblocks, or upon the individual sheets, by adding any combination of text, mtext, or attributes. Please note that these entities shall only be contained within the layer “A-TBLK-ANNO”.

The standard Public Works construction titleblocks are allowed to be customized by your firm in the following way, but it is **critical** that you first review Item #7 within the included “pwreadme.txt” file, prior to doing so:

The titleblocks can each be either left alone as single inserted blocks, or split into ‘insert’ and ‘xref’ “halves”, with all of the attributes divided with best respect given to controlling information on the individual sheets, or across the entire project.

The attribute tagnames, and sizes, widths, positions, layers and textstyle/font of all standard titleblock and Public Works logo entities are to remain unchanged in all respects, but the layer colors may be changed to suit your own plotting needs.

C. DAYSTAMP

All construction drawings shall have a daystamp (path/date/time) placed upon them, vertically just inside of the sheet information block (see example below), so as not to get lost in a stapled set of plans, and easier viewing from a rolled set.

After proper installation of the included “Daystamp” AutoLisp® program, and configuration of your (acadr12.lsp/acadr13.lsp/acadr14.lsp/acad2000.lsp/etc.) file (review the included “readlisp.txt” file), AutoCAD® users may simply use the new command, “daystamp”. If you use Softdesk® v8, proper installation of this program will also fix the (filename only) daystamp problem in AutoCAD® R14.

AutoCAD® 2000/2000i/2002 users: Using a properly configured “Rx” text entity (Express Tools > Remote Text) will automatically provide this daystamp upon each initialization of the drawing file. Please review the included “rxtext.txt” file.

All other CAD software users shall also provide this daystamp, vertically oriented.

6. BLOCKS, COLORS, AND LAYERS

A. BLOCKS

Public Works does not have a standard symbology scheme at this time, but attention is being paid to ongoing efforts to standardize on symbology, with the likely future standard being a modified form of the current ANSI set. Public Works would like to see all firms continue standardizing on all blocks used in the creation or modification of any drawing files. For those firms that utilize the older Softdesk® softwares, or the more recent “Desktop” softwares, the blocks inserted in the drawings should be the standard blocks supplied with these softwares, and utilized to the fullest in the creation of all construction documents. The users of other third-party add-on applications should be using the blocks included in those packages as well. The simple reason for this standardization is to maintain consistencies for future implementation of data acquisition based upon block names, block attributes, or other block features.

Note: The block definitions (and the sizes, orientations, tagnames, and etc. of the associated attributes) provided with the packages should not be modified in any way from their original definitions, except to ensure an entity’s color is set to BYLAYER. It is equally important that the block’s entities exist on the transparent layer “0”, and/or the correct AIA2 layer(s). If a needed block is not included with the software, a block may be created and used for incorporation into a drawing. All entities of this block shall exist either on the transparent layer “0”, and/or the appropriate AIA2 layer(s). Please review Section 7-B for more details.

B. LINE WIDTHS, COLORS, AND LINETYPES

The “A-TBLK” layers within the standard titleblocks are to remain with linetype “Continuous”. Other than that, your firm is free to use any colors, line widths, and linetypes that are desired in the creation of any drawing work. Public Works is not attempting at determining a color standard for project work at this time, but will remap drawing colors using predefined AIA2 layernaming (see below). Therefore, the color of all entities within a drawing, including those entities that comprise “blocks”, shall always be BYLAYER. AutoCAD® 2000 drawing (.DWG) format files shall use color-based plot styles only.

C. AIA2 LAYERING SCHEME

The layering scheme utilized is based upon the 2nd Edition of the “CAD Layer Guidelines”, as sponsored by the American Institute of Architects. To purchase a formal copy of AIA2 layering standards, you may contact the AIA through the Internet at <http://www.aiaonline.com>, or by calling 1-800-365-ARCH. All firms shall ensure that the layers in all submitted project drawing (.DWG) files conform to the AIA2 layernaming system. For AutoCAD® users, two AutoLisp® programs are included in the Public Works Cad Drawing Standards package to facilitate the incorporation and usage of AIA2 layers in your drawing files. Please review the “readlisp.txt” file for details on these programs. Public Works gladly welcomes,

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and in fact strongly desires, additional input for the growth of the predefined list of layers in the companion ascii data source file, "layers.aia". When properly configured, the Architectural Desktop™ and Land Development Desktop® software packages automatically control generation of entities onto AIA2 layers.

Likewise, the latest versions of AutoCAD® include layer "cataloging" routines.

Almost all layers used in a drawing should follow the AIA Cad Layer Guidelines, 2nd Edition. The exceptions to these are the few specialized layers used in the correctly configured AutoCAD®, Softdesk®, Architectural Desktop™, Land Development Desktop® and other Autodesk® and compatible softwares, such as the "DAYSTAMP" layer, the "DEFPOINTS" layer, the "NOPLOT" layer, along with a few others. These layers are also correctly considered as valid layers, within the intended context of the Public Works Cad Drawing Standards.

Please refer directly inside the included (customizable) ascii data source text file "layers.aia" to review the current list of standard AIA2-format layernames used by and at Public Works. Notes on how to modify this file for your firm are also contained within this same file.

Construction projects are greatly facilitated, and Public Works' project managers will be able to work better with the correspondingly submitted project drawing files, when the same layernaming convention is utilized throughout projects.

7. GENERAL CAD GUIDELINES

A. Generally set your layer to the transparent layer "0" before attaching reference ("xref") files. The included custom dialogue-box AutoLisp® program "AX" (for **Attach Xreference**), will ensure this automatically, along with embedding the proper *relative* path for the reference filename, whenever the source and target drawing (.DWG) files are not physically located within the same directory. (This method of using *relative* paths strongly facilitates the sharing and updating of "base" or "background" drawing (.DWG) files between project firms.)

B. Prior to making a custom block, all entities to form that block shall have the following properties: *color* – set to "bylayer", *linetype* – also set to "bylayer", and *layer* – set to "0", when another layer or linetype is not specifically needed. If there are defined AIA2 layers proper for the block entities, it may be appropriate to set the entities to these layers prior to the creation of the block.

C. All forms of filenames and pathnames, including, but not limited to, directories, AutoCAD® font, shape, xref, and image files, and all other drawing support files, shall be completely free from punctuation (and especially "space") characters, *except* for the following, which have been allowed since DOS: the dash " – ", the underscore " _ " (recommended replacement for the "space"), the dollar " \$ ", the exclamation " ! ", the tilde " ~ ", the 'at' symbol " @ ", the pound " # ", and the percent sign " % ". Usage of other punctuation characters is not acceptable.

D. All finished project drawing (.DWG) files shall be submitted in an "as-plotted" condition. This means they shall be zoomed to a proper "Limits" or "Extents" view. There are to be no stray pieces or parts leftover outside of the drawing's titleblock. This includes visible and invisible entities, such as dimensionless

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textual entities that have no display string value, or have only “space” characters, or other formatting-only (%%, for example) characters as their string value. Other types of dimensionless entities include invisible-attribute-only blocks, which are primarily meant for databasing and other concerns. Examples of these kinds of blocks are the AME_NIL, AME_FRZ, and AME_SOL blocks, created with various packages from Autodesk™, and others. This is not to say the drawing (.DWG) file cannot contain these kinds of blocks, but just that when they exist in paper space or layouts, that they shall exist inside the titleblock area only because of “Extents” concerns. Contact me at jreid@idoa.state.in.us if you need help on controlling these kinds of issues.

E. NEVER click on, or leave on, the checkbox for “Save path” when attaching xrefs or images to any drawing file, but always ensure that either: 1) the source and target files are located within the same directory, or 2) you use the included “AX” AutoLisp® program (paragraph ‘A’ above) to only embed the *relative* path. Using the “Save path” checkbox in AutoCAD® embeds the complete, hard-coded full pathname (including the user’s associated drive letter), and the resulting drawing file then causes pathname “file not found” errors upon opening by the next user.

8. STANDARDS PACKAGE INCLUDED FILES

Each “CADSTD##.ZIP” file downloaded from the Public Works Cad Drawing Standards website (<http://www.state.in.us/idoa/pwd/cadstds.html>) comprises of files to make adhering to Public Works Cad Standards easier.

cadstd12.zip	for AutoCAD® Release 12 and 13 – compatible softwares
cadstd14.zip	for AutoCAD® Release 14 – compatible softwares
cadstd2k.zip	for AutoCAD® 2000 – compatible softwares

The following is a description of each file included within a “CADSTD##.ZIP” file. Except for “daystamp.dwg” (R12+), all .DWG files are version-specific for Standards packages.

A. AIA2 LAYER-NAMING

There are two AutoLisp® programs and two customizable ascii data files for ease of creation of AIA2 layers, and working with AIA2 layers, within AutoCAD®:

<u>File Name</u>	<u>Description</u>
1. layers.aia	Public Works layers source text, see inside for notes.
2. setupaia.lsp	Creates the AIA2 layers by “ALL”, or by discipline(s).
3. findaia.lsp	Search source file by word/phrase for correct layer.
4. layeraia.org	Original AIA2 version of “layers.aia” file above

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B. STANDARD TITLEBLOCKS

Standard titleblocks available include these ANSI, ARCH, and ISO formats:

<u>File Name</u>	<u>Description</u>
1. Dapw1117.dwg	ANSI "B" 11" x 17" (279mm x 432mm)
2. Dapw1218.dwg	ARCH "B"/"2" 12" x 18" (305mm x 457mm)
3. Dapw1722.dwg	ANSI "C" 17" x 22" (432mm x 559mm)
4. Dapw1824.dwg	ARCH "C"/"3" 18" x 24" (457mm x 610mm)
5. Dapw2234.dwg	ANSI "D" 22" x 34" (559mm x 864mm)
6. Dapw2436.dwg	ARCH "D"/"4" 24" x 36" (510mm x 914mm)
7. Dapw3042.dwg	ARCH "F"/"5" 30" x 42" (762mm x 1067mm)
8. Dapw3444.dwg	ANSI "E" 34" x 44" (864mm x 1118mm)
9. Dapw3648.dwg	ARCH "E"/"6" 36" x 48" (914mm x 1219mm)
10. Dapw8511.dwg	ANSI "A" 8.5" x 11" (216mm x 279mm)
11. Dapw9012.dwg	ARCH "A"/"1" 9.0" x 12" (229mm x 305mm)
12. Dapw-ia0.dwg	ISO "A0" 841mm x 1189mm (33.11" x 46.81")
13. Dapw-ia1.dwg	ISO "A1" 594mm x 841mm (23.35" x 33.11")
14. Dapw-ia2.dwg	ISO "A2" 420mm x 594mm (16.54" x 23.35")
15. Dapw-ia3.dwg	ISO "A3" 297mm x 420mm (11.69" x 16.54")
16. Dapw-ia4.dwg	ISO "A4" 210mm x 297mm (8.27" x 11.69")

Each titleblock has been designed with concern for left-sided binding or stapling, with the smaller, medium, and larger titleblocks each including left-side margins of approximately 0.75", 1.00", and up to 1.25", respectively.

D. MISCELLANEOUS FILES

Appropriate AutoCAD® versions of .DWG files (per .ZIP file) are included:

<u>File Name</u>	<u>Description</u>
1. daystamp.dwg	Daystamp AutoLisp® program standard text block
2. seal1.dwg	High-res Indiana State Seal block, official use only
3. seal2.dwg	Med-res Indiana State Seal block, official use only
4. seal3.dwg	Low-res Indiana State Seal block, official use only
5. seal.tif	Med-res logo attachment to R14 & 2000 titleblocks
6. seal-big.tif	High-res Indiana State Seal image, official use only

E. AUTOLISP® PROGRAMS

In addition to the AIA2 layernaming AutoLisp® programs, to further assist:

<u>File Name</u>	<u>Description</u>
1. ax.lsp	Attach Xreference using a relative pathname
2. daystamp.lsp	Daystamp text block insertion and updating

F. STANDARD DOCUMENTS

These standard documents are contained with each "CADSTD##.ZIP" file:

<u>File Name</u>	<u>Description</u>
1. PWcadstd.pdf	This document, Adobe Acrobat Reader required
2. pwreadme.txt	General Cad Stds overview, FAQ, essential reading

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|-----------------|--|
| 3. readlisp.txt | AutoLisp® instructions, see the longer note just below |
| 4. rxtxt.txt | instructions for 2000/2000i/2002 auto-Daystamp text |

Note: The detailed instructions for using all of the above included AutoLisp® programs, and for configuring AutoCAD® to always auto-load these programs, are contained in the included “readlisp.txt” file, which is also essential reading.

9. PROJECT DRAWING FILES SUBMITTAL REQUIREMENTS

PREFERRED METHOD:

Have, and know how to use, “ZIP” software (PkZip for Windows®, WinZip®, or etc.).

Create a single “.ZIP” file, containing all AutoCAD® drawing (.DWG) files (and any necessary raster <scanned background> images – typically .TIF files), and submit by attaching the .ZIP file into an email, and send it to the Public Works project manager.

Reminder: All construction sheet drawing (.DWG) files must have all reference (“xref”) files ‘bound’ in first. Any project drawing files missing any reference drawing or image files will be rejected for immediate correction and replacement.

The project cad files shall be contained within this .ZIP file without any embedded paths.

Submit the project drawing files by “attaching” this .ZIP file to an **email**, give the email a subject of “**Cad submittal: <project familiar name>**”, include within the email text body any usual and customary sender/contact information, any necessary distinguishing factors (such as the particular discipline(s) of the drawings being sent, and/or a simple drawing list), and then send the email directly to the Public Works project manager.

You may use multiple emails only if absolutely necessary to avoid submittal by disk(s).

ALTERNATIVE METHOD: *(To be used ONLY where a firm still does not utilize Internet email, or where the total aggregate submittal size of a set of project drawing (.DWG) files is even prohibitive to feasible Internet transmission via multiple email attachments.)*

Reminder: All construction sheet drawing (.DWG) files must have all reference (“xref”) files ‘bound’ in first. Any project drawing files missing any reference drawing or image files will be rejected for immediate correction and replacement.

Optionally: compress all project drawing (.DWG) files, and any necessary raster images <scanned backgrounds> into .ZIP file(s) as described above, but only do this if the media size is limited. Reminder: do not embed any paths within a .ZIP file.

Copy to CD-ROM(s) and/or magnetic disk(s), and CLEARLY LABEL the media, *and any packaging of this media*, with the FAMILIAR PROJECT NAME, any customary sender/contact information, any necessary distinguishing factors (such as the particular discipline(s) of the drawings being sent, and/or a simple drawing list), and then deliver this package directly to the Public Works project manager. Do not forget to label media.

REGARDLESS OF THE METHOD CHOSEN ABOVE:

Submittal is **not** complete until the Public Works project manager has verified the receipt of all relevant project drawing (.DWG) files in authentic representation of the hardcopies.